Mini-Medical Series

Troubleshooting Reference

Trained Service Personal ONLY

Observe ALL safety Procedures in the service manual

Reference: Installation, Operation, Service & parts Manual (P/N:0000061122)

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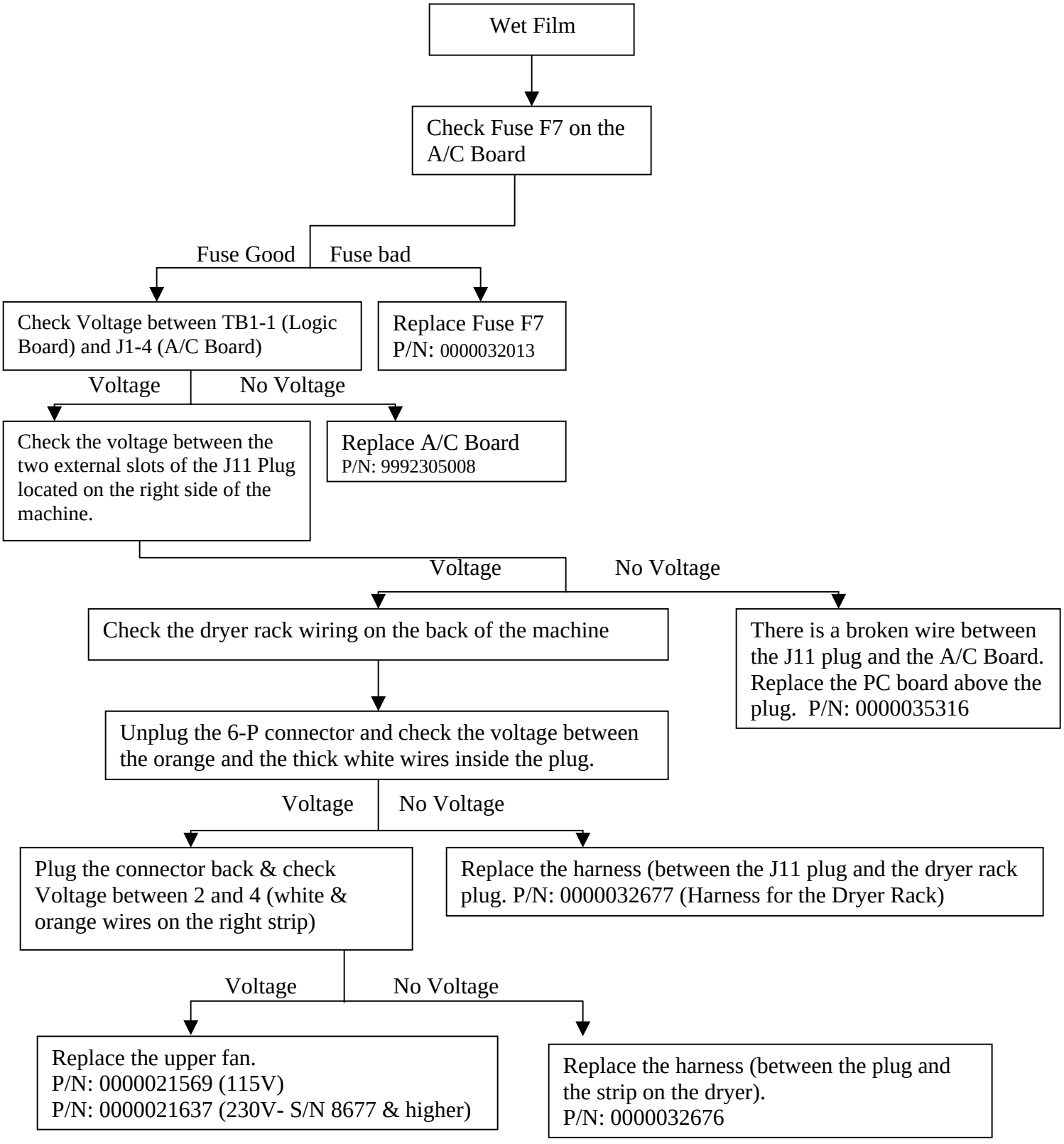
Note: If you have a 230V Processor, please consult page 11 for common resistances values and parts numbers.

Key

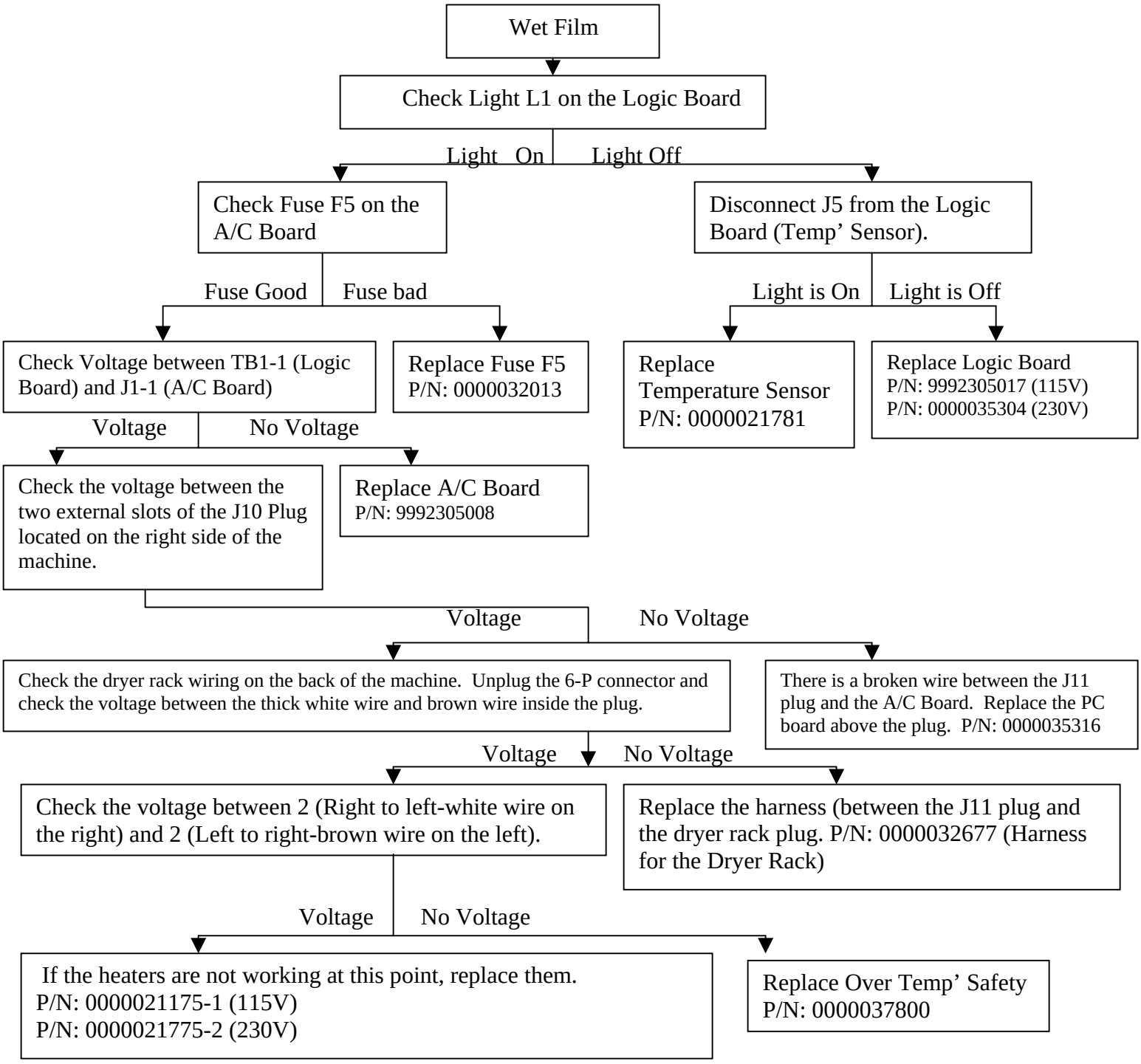
> Greater Than
< Lower Than
= Equal To
≈ About the Same

1) **No Dry Heat -Wet Film (Upper Fan is not Working)**


Wet Film
Check Fuse F7 on the A/C Board
Fuse Good
Fuse bad
Check Voltage between TB1-1 (Logic Board) and J1-4 (A/C Board)
Replace Fuse F7 P/N: 0000032013
Voltage
No Voltage
Check the voltage between the two external slots of the J11 Plug located on the right side of the machine.
Replace A/C Board P/N: 9992305008
Voltage
No Voltage
Check the dryer rack wiring on the back of the machine
There is a broken wire between the J11 plug and the A/C Board. Replace the PC board above the plug. P/N: 0000035316
Unplug the 6-P connector and check the voltage between the orange and the thick white wires inside the plug.
Voltage
No Voltage
Plug the connector back & check Voltage between 2 and 4 (white & orange wires on the right strip)
Replace the harness (between the J11 plug and the dryer rack plug. P/N: 0000032677 (Harness for the Dryer Rack)
Voltage
No Voltage
Replace the upper fan.
P/N: 0000021569 (115V)
P/N: 0000021637 (230V- S/N 8677 & higher)
Replace the harness (between the plug and the strip on the dryer).
P/N: 0000032676

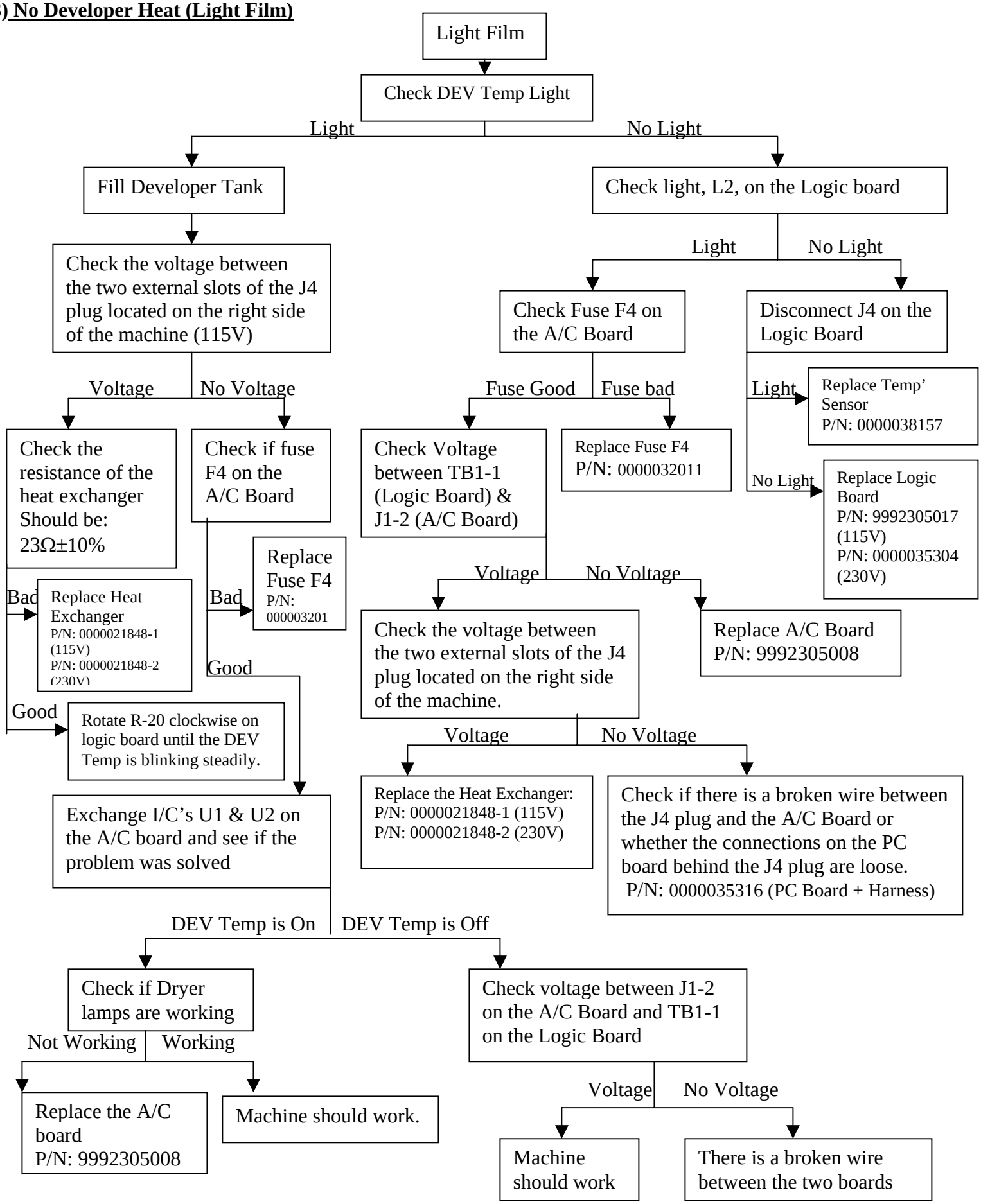
Note: If the dryer is working check / fix replenishment rates:
Weak fixer doesn't harden well and therefore, the film will not dry adequately.

2) **No Dry Heat -Wet Film (Dryer Lamps are not Working)**


Wet Film
Check Light L1 on the Logic Board
Light On
Light Off
Check Fuse F5 on the A/C Board
Disconnect J5 from the Logic Board (Temp' Sensor).
Fuse Good
Fuse bad
Light is On
Light is Off
Check Voltage between TB1-1 (Logic Board) and J1-1 (A/C Board)
Replace Fuse F5 P/N: 0000032013
Replace Temperature Sensor P/N: 0000021781
Replace Logic Board P/N: 9992305017 (115V) P/N: 0000035304 (230V)
Voltage
No Voltage
Check the voltage between the two external slots of the J10 Plug located on the right side of the machine.
Replace A/C Board P/N: 9992305008
Voltage
No Voltage
Check the dryer rack wiring on the back of the machine. Unplug the 6-P connector and check the voltage between the thick white wire and brown wire inside the plug.
There is a broken wire between the J11 plug and the A/C Board. Replace the PC board above the plug. P/N: 0000035316
Voltage
No Voltage
Check the voltage between 2 (Right to left-white wire on the right) and 2 (Left to right-brown wire on the left).
Replace the harness (between the J11 plug and the dryer rack plug. P/N: 0000032677 (Harness for the Dryer Rack)
Voltage
No Voltage
If the heaters are not working at this point, replace them. P/N: 0000021175-1 (115V) P/N: 0000021775-2 (230V)
Replace Over Temp' Safety P/N: 0000037800

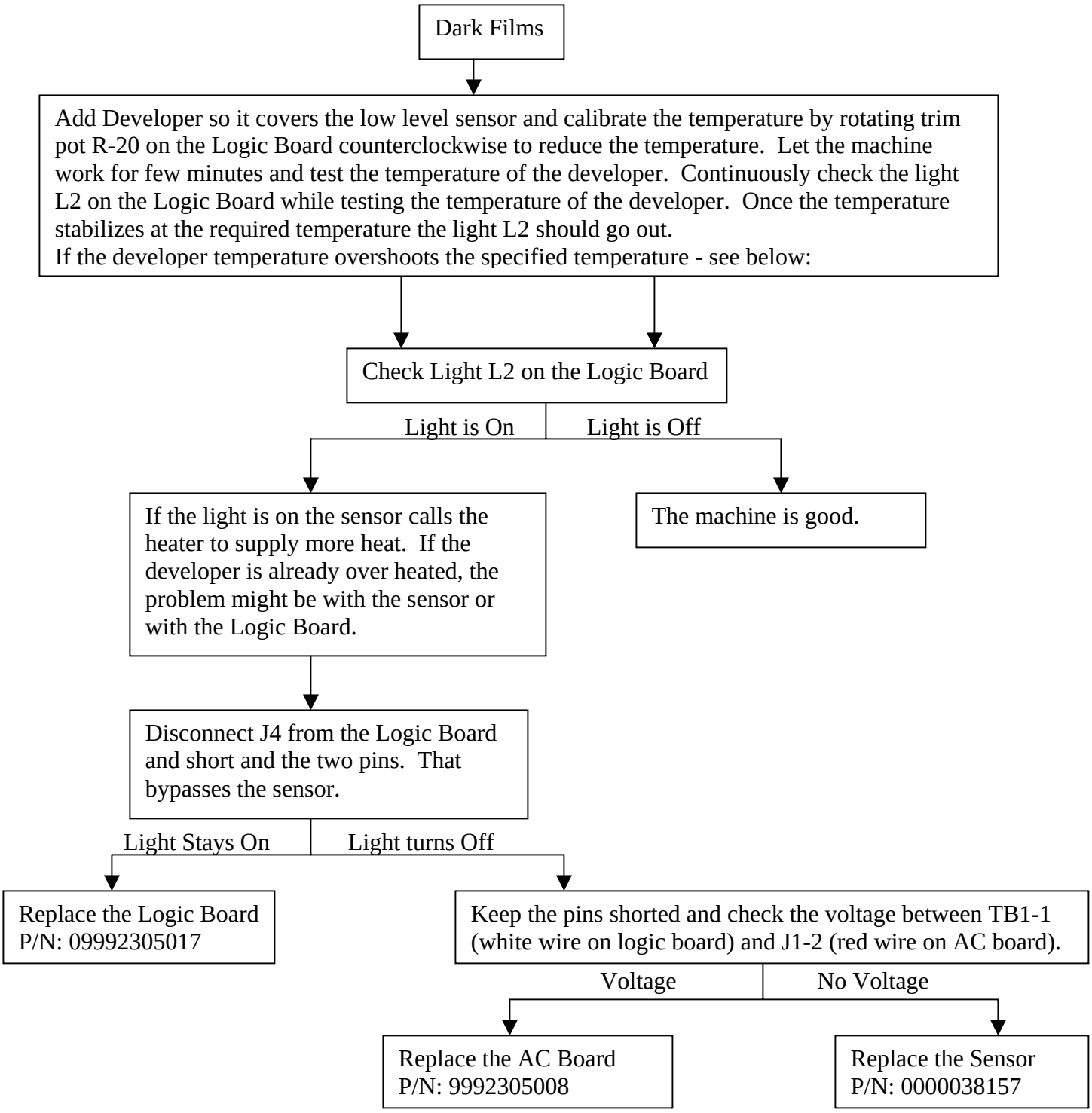
Note: If the dryer is working check / fix replenishment rates:
Weak fixer doesn't harden well and therefore, the film will not dry adequately.

3) No Developer Heat (Light Film)


Light Film
Check DEV Temp Light
Light
No Light
Fill Developer Tank
Check light, L2, on the Logic board
Check the voltage between the two external slots of the J4 plug located on the right side of the machine (115V)
Light
No Light
Check Fuse F4 on the A/C Board
Disconnect J4 on the Logic Board
Voltage
No Voltage
Fuse Good
Fuse bad
Light
Replace Temp' Sensor P/N: 0000038157
Check the resistance of the heat exchanger Should be: 23Ω±10%
Check if fuse F4 on the A/C Board
Check Voltage between TB1-1 (Logic Board) & J1-2 (A/C Board)
Replace Fuse F4 P/N: 0000032011
No Light
Replace Logic Board P/N: 9992305017 (115V) P/N: 0000035304 (230V)
Bad
Replace Heat Exchanger P/N: 0000021848-1 (115V) P/N: 0000021848-2 (230V)
Bad
Replace Fuse F4 P/N: 000003201
Voltage
No Voltage
Check the voltage between the two external slots of the J4 plug located on the right side of the machine.
Replace A/C Board P/N: 9992305008
Good
Good
Rotate R-20 clockwise on logic board until the DEV Temp is blinking steadily.
Voltage
No Voltage
Replace the Heat Exchanger: P/N: 0000021848-1 (115V) P/N: 0000021848-2 (230V)
Check if there is a broken wire between the J4 plug and the A/C Board or whether the connections on the PC board behind the J4 plug are loose. P/N: 0000035316 (PC Board + Harness)
Exchange I/C's U1 & U2 on the A/C board and see if the problem was solved
DEV Temp is On
DEV Temp is Off
Check if Dryer lamps are working
Check voltage between J1-2 on the A/C Board and TB1-1 on the Logic Board
Not Working
Working
Voltage
No Voltage
Replace the A/C board P/N: 9992305008
Machine should work.
Machine should work
There is a broken wire between the two boards

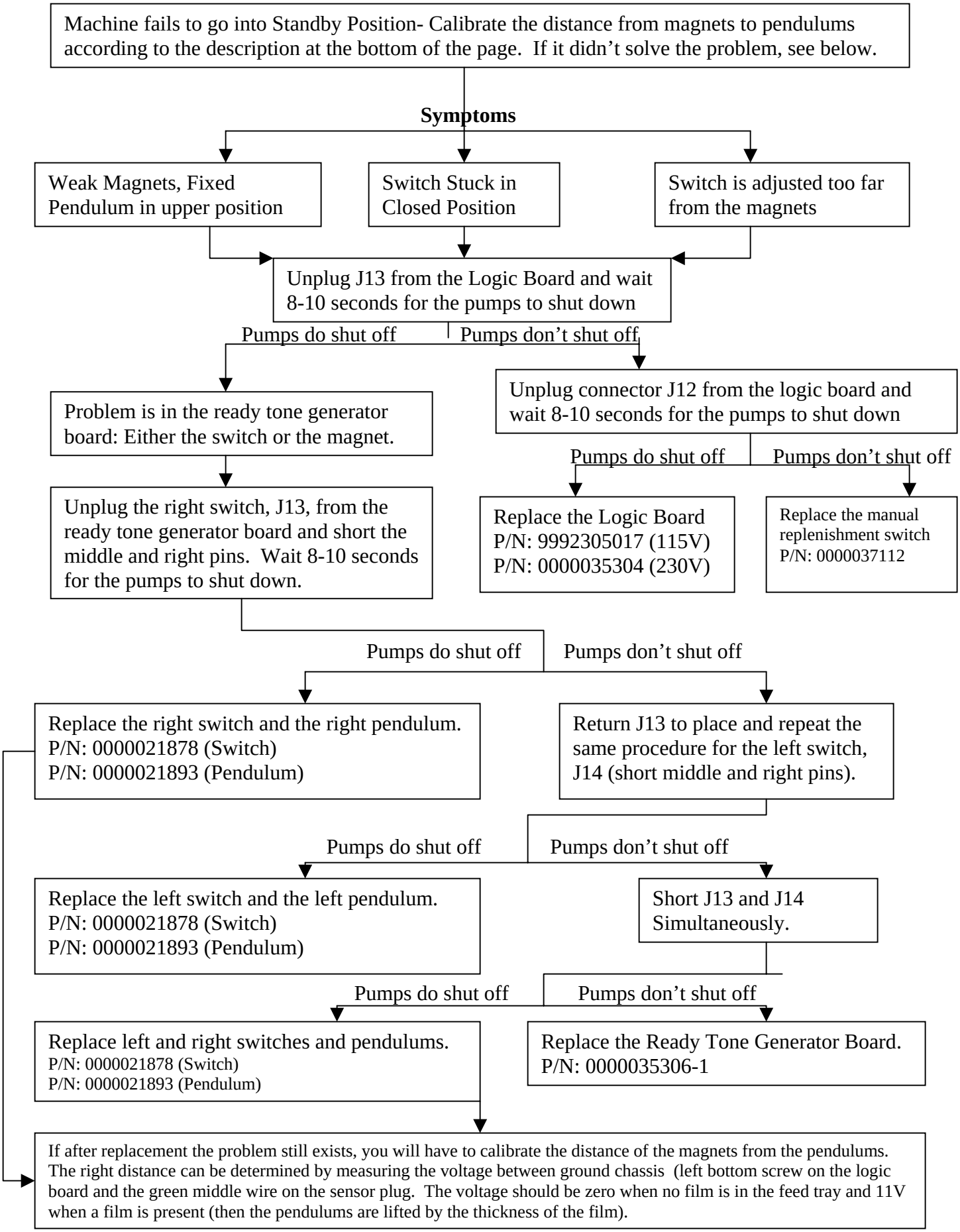
Note: check / fix developer replenishment rates: Weak developer chemistry will not develop well.

4) **Dark Films-Over Heated Developer**

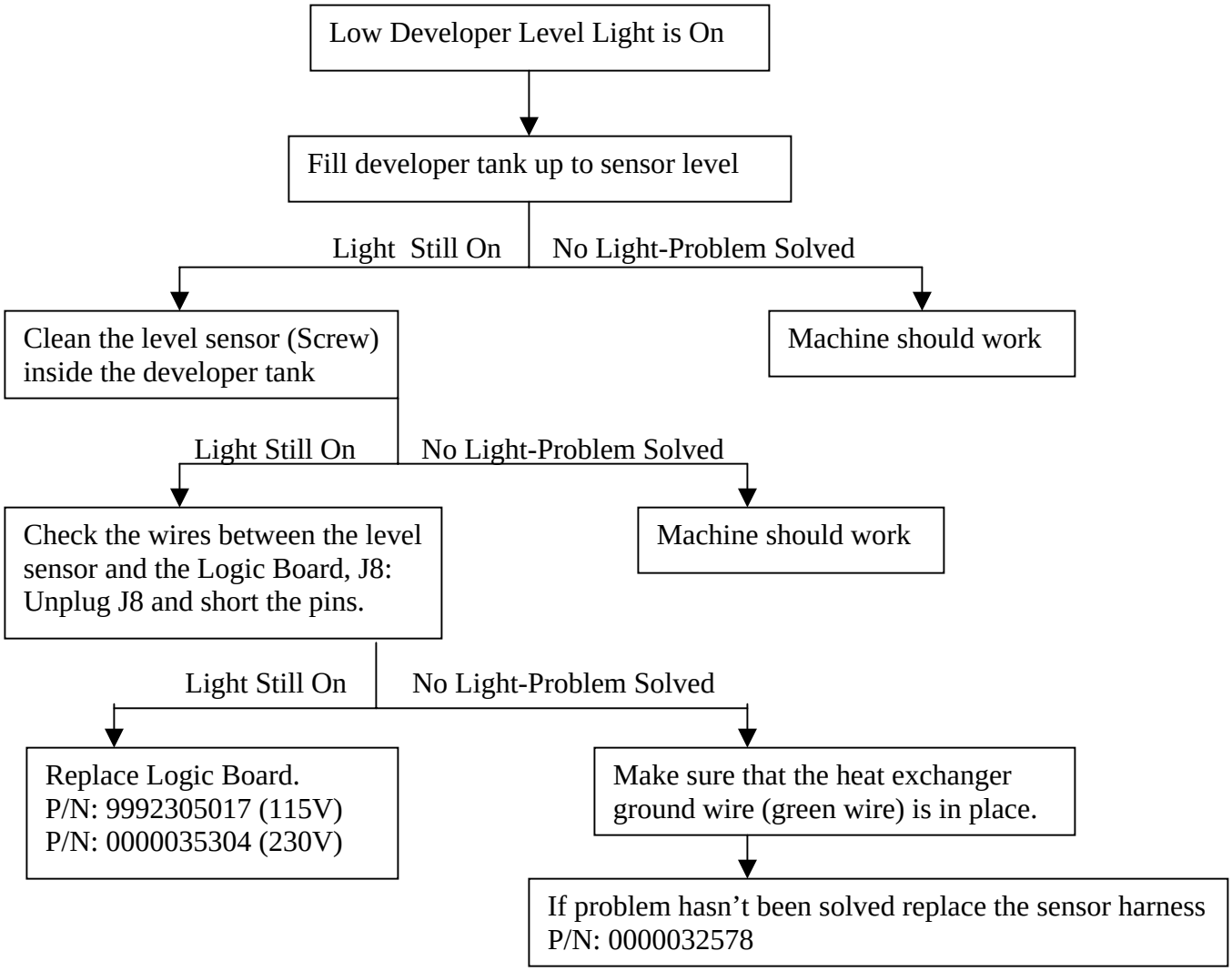

Dark Films
Add Developer so it covers the low level sensor and calibrate the temperature by rotating trim pot R-20 on the Logic Board counterclockwise to reduce the temperature. Let the machine work for few minutes and test the temperature of the developer. Continuously check the light L2 on the Logic Board while testing the temperature of the developer. Once the temperature stabilizes at the required temperature the light L2 should go out.
If the developer temperature overshoots the specified temperature - see below:
Check Light L2 on the Logic Board
Light is On
Light is Off
If the light is on the sensor calls the heater to supply more heat. If the developer is already over heated, the problem might be with the sensor or with the Logic Board.
The machine is good.
Disconnect J4 from the Logic Board and short and the two pins. That bypasses the sensor.
Light Stays On
Light turns Off
Replace the Logic Board
P/N: 09992305017
Keep the pins shorted and check the voltage between TB1-1 (white wire on logic board) and J1-2 (red wire on AC board).
Voltage
No Voltage
Replace the AC Board
P/N: 9992305008
Replace the Sensor
P/N: 0000038157

Note: Be sure the darkroom does not have light leaks that will pre-expose the film.

5) **Pumps Work Continuously-Machine doesn't go into Standby mode**


Machine fails to go into Standby Position- Calibrate the distance from magnets to pendulums according to the description at the bottom of the page. If it didn't solve the problem, see below.
Symptoms
Weak Magnets, Fixed Pendulum in upper position
Switch Stuck in Closed Position
Switch is adjusted too far from the magnets
Unplug J13 from the Logic Board and wait 8-10 seconds for the pumps to shut down
Pumps do shut off
Pumps don't shut off
Problem is in the ready tone generator board: Either the switch or the magnet.
Unplug connector J12 from the logic board and wait 8-10 seconds for the pumps to shut down
Pumps do shut off
Pumps don't shut off
Unplug the right switch, J13, from the ready tone generator board and short the middle and right pins. Wait 8-10 seconds for the pumps to shut down.
Replace the Logic Board
P/N: 9992305017 (115V)
P/N: 0000035304 (230V)
Replace the manual replenishment switch
P/N: 0000037112
Pumps do shut off
Pumps don't shut off
Replace the right switch and the right pendulum.
P/N: 0000021878 (Switch)
P/N: 0000021893 (Pendulum)
Return J13 to place and repeat the same procedure for the left switch, J14 (short middle and right pins).
Pumps do shut off
Pumps don't shut off
Replace the left switch and the left pendulum.
P/N: 0000021878 (Switch)
P/N: 0000021893 (Pendulum)
Short J13 and J14 Simultaneously.
Pumps do shut off
Pumps don't shut off
Replace left and right switches and pendulums.
P/N: 0000021878 (Switch)
P/N: 0000021893 (Pendulum)
Replace the Ready Tone Generator Board.
P/N: 0000035306-1
If after replacement the problem still exists, you will have to calibrate the distance of the magnets from the pendulums. The right distance can be determined by measuring the voltage between ground chassis (left bottom screw on the logic board and the green middle wire on the sensor plug. The voltage should be zero when no film is in the feed tray and 11V when a film is present (then the pendulums are lifted by the thickness of the film).

6) Low Developer Level Light is always ON


Low Developer Level Light is On
Fill developer tank up to sensor level
Light Still On
No Light-Problem Solved
Clean the level sensor (Screw) inside the developer tank
Machine should work
Light Still On
No Light-Problem Solved
Check the wires between the level sensor and the Logic Board, J8: Unplug J8 and short the pins.
Machine should work
Light Still On
No Light-Problem Solved
Replace Logic Board.
P/N: 9992305017 (115V)
P/N: 0000035304 (230V)
Make sure that the heat exchanger ground wire (green wire) is in place.
If problem hasn't been solved replace the sensor harness
P/N: 0000032578

5A)

Q)
During installation and initial set-up, the LOW DEV and DEV TEMP lights are ON even when the developer tank is full with water.

A)
As water cannot conduct well enough, the level sensor will signal a low solution level to the PC board and automatically disable the developer heater. Make sure to add kosher/coarse salt or some developer chemical to the water to allow conductivity.

7) **Developer Heating Time is too Long**

Background:
The re-circulation pump circulates the developer through the heat exchanger and into the developer tank.
A thermostat measures the developer temperature at the exit from the heat exchanger. When the temperature exceeds 165 F the thermostat will divert the current from the heat exchanger and by that will prevent further heating. It will allow heating only when the temperature of the developer drops back to the reset point. When the developer re-circulation pump is not working properly the amount of developer going through the heat exchanger is small and therefore, heated fairly quickly. Since the thermostat senses only the temperature of the fluid in its proximity, which reaches 165 F quickly when the volume of fluid is small, it opens up and prevents additional heating. As a result, the developer heating time is extended significantly.

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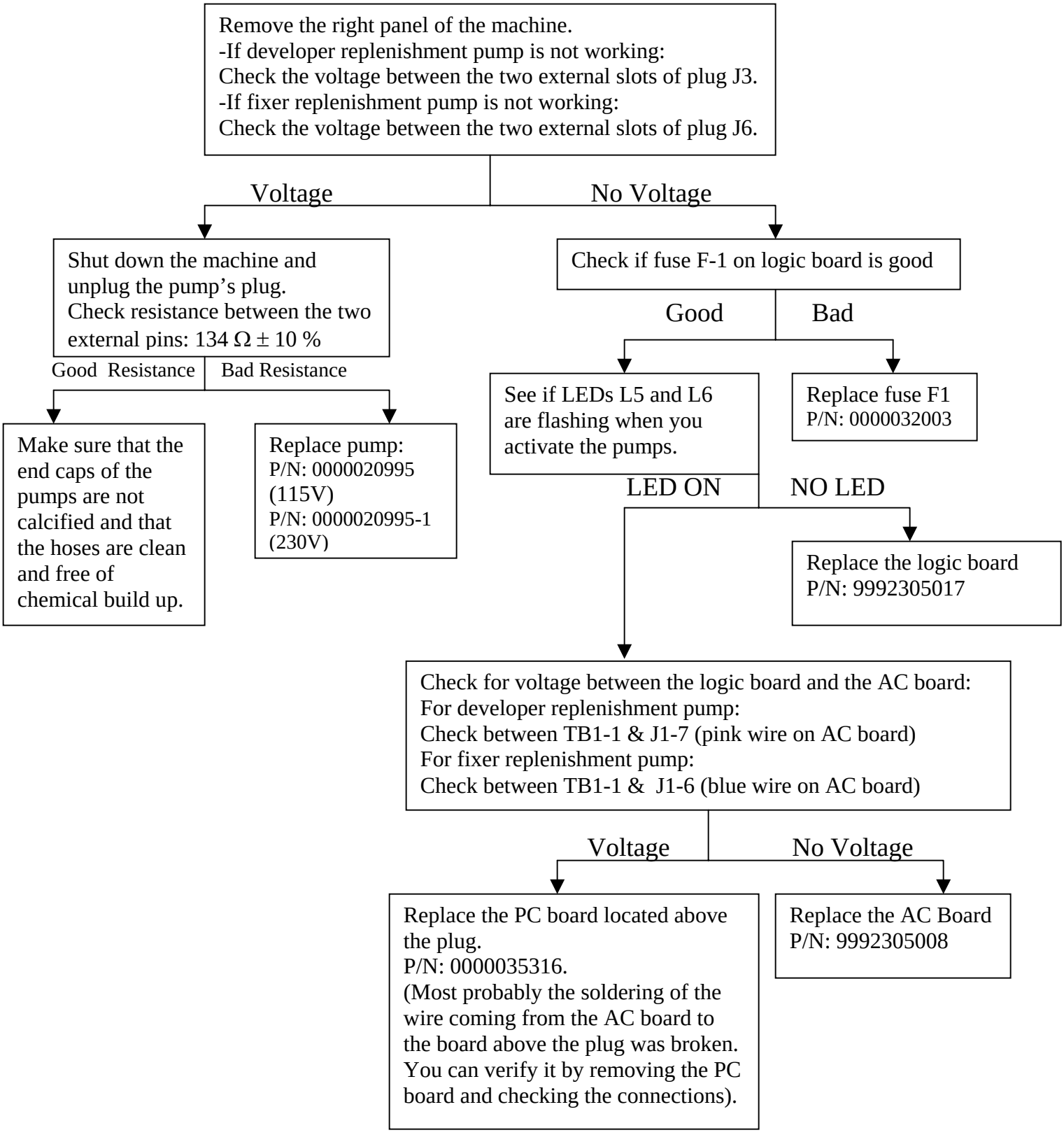
Check if the re-circulation pump is working by physically listening to it or touching it, or by observing the developer flow coming into the developer tank. The inlets are located under the white plastic diffuser and on the left wall of the developer tank.

↓

If the re-circulation pump is not working appropriately and the developer flow is too weak than the pump has to be replaced.
P/N: 0000022100 (115V-Newer model, blue/green pump)
P/N: 0000022101 (230V- Newer model, blue/green pump)
P/N: 0000021145 (115V-Older model, red/brown pump)
P/N: 0000021101 (230V- Older model, red/brown pump)

8) The Replenishment Pump/s are not Working (Developer and/or Fixer Pumps).


Remove the right panel of the machine.
-If developer replenishment pump is not working:
Check the voltage between the two external slots of plug J3.
-If fixer replenishment pump is not working:
Check the voltage between the two external slots of plug J6.
Voltage
No Voltage
Shut down the machine and unplug the pump's plug.
Check resistance between the two external pins: 134 Ω ± 10 %
Good Resistance
Bad Resistance
Make sure that the end caps of the pumps are not calcified and that the hoses are clean and free of chemical build up.
Replace pump:
P/N: 0000020995 (115V)
P/N: 0000020995-1 (230V)
Check if fuse F-1 on logic board is good
Good
Bad
See if LEDs L5 and L6 are flashing when you activate the pumps.
Replace fuse F1
P/N: 0000032003
LED ON
NO LED
Replace the logic board
P/N: 9992305017
Check for voltage between the logic board and the AC board:
For developer replenishment pump:
Check between TB1-1 & J1-7 (pink wire on AC board)
For fixer replenishment pump:
Check between TB1-1 & J1-6 (blue wire on AC board)
Voltage
No Voltage
Replace the PC board located above the plug.
P/N: 0000035316.
(Most probably the soldering of the wire coming from the AC board to the board above the plug was broken. You can verify it by removing the PC board and checking the connections).
Replace the AC Board
P/N: 9992305008

9) **Fixer/Developer is Disappearing from the Machine**

Chemical can be disappearing from the machine in three different ways:

a) Evaporating.
b) Siphoning.
c) Leaking.

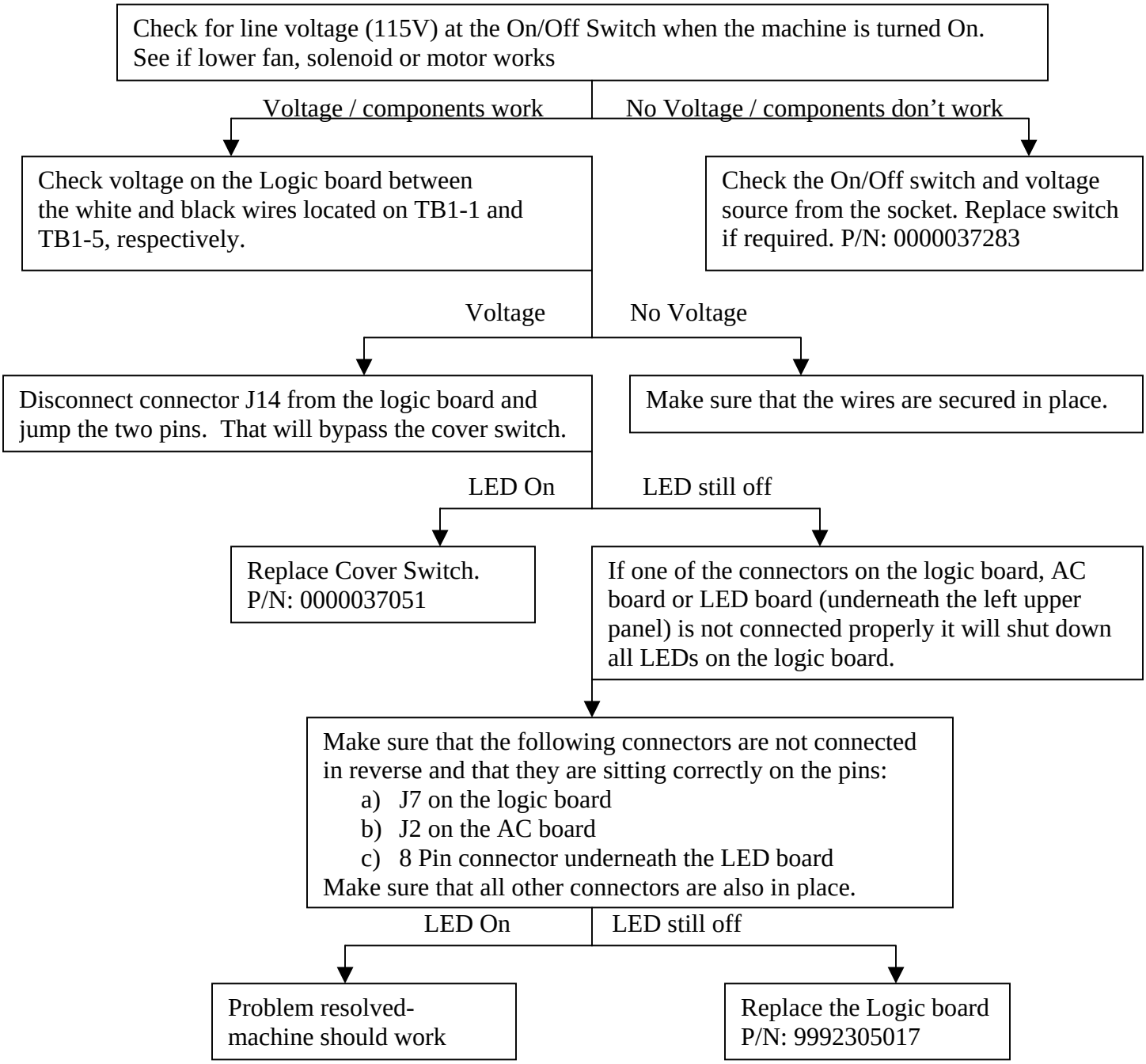
a)
If the temperature of the developer is about 95°F and therefore, the temperature of the fixer cannot be more than that, the chemical could not be evaporating.

b)
Siphoning can happen when the white gooseneck tube outlet is inside the chemical: the chemical will flow back to the reservoir tanks outside the machine. To prevent it, reposition the gooseneck slightly above the chemical level. Don't raise it to much in order to prevent splashing of chemical during replenishment.

c)
Check the drainage ball valve located at the front of the processor. If this valve is leaking the chemical will go directly to the drainage without anybody noticing it.
P/N: 0000087222 (Gray W/Blue Handle)
P/N: 0000087220 (Black-older style)

If you will increase the replenishment rate to compensate the disappearance of the chemical the problem will not be solved. The outcome will be a greater rate of disappearance, as you will use more chemistry per sheet.
And by comparing it to the other chemical (that does not disappear and has a regular replenishment rate) it will seem as if the disappearance rate is greater.

10. <u>The Machine Doesn't Come On: No LED on the Logic Board.</u>


Check for line voltage (115V) at the On/Off Switch when the machine is turned On. See if lower fan, solenoid or motor works
Voltage / components work
No Voltage / components don't work
Check voltage on the Logic board between the white and black wires located on TB1-1 and TB1-5, respectively.
Check the On/Off switch and voltage source from the socket. Replace switch if required. P/N: 0000037283
Voltage
No Voltage
Disconnect connector J14 from the logic board and jump the two pins. That will bypass the cover switch.
Make sure that the wires are secured in place.
LED On
LED still off
Replace Cover Switch. P/N: 0000037051
If one of the connectors on the logic board, AC board or LED board (underneath the left upper panel) is not connected properly it will shut down all LEDs on the logic board.
Make sure that the following connectors are not connected in reverse and that they are sitting correctly on the pins:
a) J7 on the logic board
b) J2 on the AC board
c) 8 Pin connector underneath the LED board
Make sure that all other connectors are also in place.
LED On
LED still off
Problem resolved- machine should work
Replace the Logic board P/N: 9992305017

11. T**he Main Breaker turns off When the Machine is turned On.**

Turn off the unit and remove the right panel from the processor.

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Disconnect all plugs from the unit and then turn it back on.

↓

Connect the plugs one by one to determine which is causing the main breaker to be turned off.

12. **One Replenishment Pump is Working Continuously**

If only one replenishment pump is working all the time check if the corresponding LED on the logic board in On or Off:
LED L5-Developer Replenishment.
LED L6-Fixer Replenishment

LED OFF

Replace the A/C Board.
P/N: 9992305008

LED ON

If both LEDs are flashing all the time we have two problems:

1. The pumps should be flashing only for 8-10 seconds when a film is inserted.
2. One pump is not working.

To resolve the first problem you should consult with troubleshooting chart number 5.
To resolve the second problem you should consult with troubleshooting chart number 8.

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Mini Medical Resistance
120 Volt

Description	Part Number	Resistance Value
Recirculation Pump March (red) (Old Style)	9992305035 (21145)	31.8 Ω ± 10%
Recirculation Pump Iwaki (blue/green) (New Style)	0000022100	116 Ω ± 10%
Developer Heater	0000021848-1	23 Ω ± 10%
Replenish Pump	0000020995	134 Ω ± 10%
Water Solenoid	0000049008	430 Ω ± 10%
Dryer Lamps (Heaters)	0000021175-1	43 Ω ± 10%
Dryer Fan	0000021569	26 Ω ± 10%
Drive Motor	9992305311	104.5 Ω ± 10%

Mini Medical Resistance
230 Volt

Description 230 Volt	Part Number	Resistance Value ± 5%
Recirculation Pump March (red) (Old Style)	0000021525	1 KΩ%
Recirculation Pump Iwaki (blue/green)	00000022101	470 Ω
Developer Heater	0000021848-2	90 Ω
Replenish Pump	0000020995-1	560 Ω
Water Solenoid	0000049013	2.5 KΩ
Dryer Lamps (Heaters)	0000021175-2	170 Ω ea.
Dryer Fan	0000021637	100 Ω
Drive Motor 230 50/60Hz	0000021490	410 Ω

Parts List for 230V

PC Logic Board	0000035304
Drive Motor	0000021507
Heater Assembly	0000021848-2
Replenishment Pump	0000020995-1
Heating Lamps I.R	0000021175-2
Recirculation Pump (old style-red/brown)	0000021101
Recirculation Pump (new style-blue/green)	0000022101
Fan Assy, Lower	0000021637
Heater, 550W	0000021848-2